What is claimed is:

1. A sensor including:

(1) a resistive element having a top surface electrode and a bottom surface electrode;

(2) a sensing element for sensing energy from outside and generating an electrical signal;

(3) a field effect transistor element in which a gate electrode is formed on the rear surface of the chip; and

(4) a substrate having a first electrode, a second electrode, and a third electrode on the top surface of said substrate;

wherein

the bottom surface electrode of said resistive element is electrically connected with the first electrode of said substrate;

the gate electrode of said field effect transistor element is electrically connected to a portion of the top surface electrode of said resistive element in such a way that the gate electrode and a portion of the top surface electrode of said resistive element coincides;

one of the electrodes of said sensor element is electrically connected with a portion of the top surface electrode of said resistive element;

a source electrode and a drain electrode of said field effect transistor element are respectively electrically connected with the second electrode and the third electrode on said substrate; and

the other electrode of said sensing element is electrically connected with the first electrode on said substrate.

2. The sensor of claim 1 wherein said resistive element is formed with one of a ceramic material, glass material, and ferrite material.

3. The sensor of claim 1 wherein the top surface electrode and the bottom surface electrode of said resistive element contain at lease one of chromium, tin, and indium.

4. A method of manufacturing a sensor, said sensor including:

(1) a resistive element having a top surface electrode and a bottom surface electrode;

(2) a sensing element for sensing energy from outside and generating an electrical signal;

(3) a field effect transistor element on which a gate electrode is formed on the rear surface of the chip; and

(4) a substrate having a first electrode, a second electrode, and a third electrode on the top surface of said substrate;

said method comprising the steps of:

electrically connecting the bottom surface electrode of said resistive element with the first electrode of said substrate;

electrically connecting the gate electrode of said field effect transistor element to a portion of the top surface electrode of said resistive element in such a way that the gate electrode and a portion of the top surface electrode of said resistive element coincides;

electrically connecting one of the electrodes of said sensing element with a portion of the top surface electrode of said resistive element;

electrically connecting a source electrode and a drain electrode of said field effect transistor element with the second electrode and the third electrode on said substrate, respectively; and

electrically connecting the other electrode of said sensing element with the first electrode on said substrate.

5. The method of manufacturing a sensor of claim 4 wherein the method of manufacturing said resistive element comprises the steps of:

forming an electrode over the entire top and bottom surfaces of a large-area flat resistor body in advance;

measuring its resistance value; and

cutting to predetermined dimensions based on the measured resistance value to obtain a predetermined resistance value.

6. The method of manufacturing a resistive element of claim 5 wherein said resistor body is formed by sintering at a temperature at which the water absorption rate becomes 1% or below.

7. The method of manufacturing a sensor of claim 4 wherein the step of electrically connecting the bottom surface electrode of said resistive element with the first electrode of said substrate further comprising:

obtaining a predetermined resistance value by electrically connecting the bottom surface electrode of said resistive element with the first electrode of said

substrate by using a conductive material and controlling the amount of the conductive material, thereby controlling the amount of resin that rises on the sides of said resistive element.

8. The method of manufacturing a sensor of claim 4, further comprising the step of:

obtaining a predetermined resistance value by controlling the resistance value and forming a resistive element having a predetermined value by performing at least one of heat treatment in a vacuum, heat treatment in a reducing gas atmosphere, and heat treatment in an inactive gas atmosphere, after forming the top surface electrode and the bottom surface electrode of said resistive element.

9. The method of manufacturing a sensor of claim 8, further comprising the step of:

performing heat treatment in the atmosphere or in an oxygen atmosphere after performing heat treatment in one of a vacuum, a reducing gas atmosphere, and an inactive gas atmosphere.